

Caves, in Giles County, Virginia, curiously enough, is not blind. This is paralleled in the case of two species of spiders, however, which were collected for me in a cave in Oregon, over a year ago, by Professor Cope. In one of them there is not a vestige of the eyes remaining, while in the other they are well developed. A Myriapod, which appears to be a *Julus*, from the same cavern also has eyes. The *Polydesmus caricola* Packard, from a cave in Utah, seems to have well-developed eyes. The *Orchesella caeca*, which still remains to be fully described, has very undeveloped eyes, but differs in no other essential from its congeners. It was also collected in an Oregon cavern by Professor Cope. Multitudes of facts might be added, but the subject is too large a one for hasty generalizations, and must be approached with the same thoroughness of purpose which has characterized the work of Messrs. Darwin and Wallace in their essays upon kindred subjects relating to the origination of species. We may be allowed, however, to add that, in the absence of proof to the contrary, with the increase in the number of known blind forms which are often congeneric with light-loving species, there is the strongest kind of ground for supposing that they have descended from forms which had eyes, and which wandered into these recesses, where, after many generations had lived and died, a blind form appeared, which resulted from the gradual abortion of the visual organs of its ancestors. In proof of this we have the partially blind *Orchesella*, which now seems to be verging towards such a condition. In the absence of a greater number of facts we are not justified in inferring more. True, we have a few instances amongst the mollusks, some of which in their larval states have useful eyes, but which afterwards become useless and abort as the shell develops and gets thicker. Some terrestrial Myriapods are blind, such as *Euryptauropus*; so is *Lumbricus*, the earth-worm, and some of the dirt-abiding *Thysanura*, which also live among fallen leaves, such as *Campodea*, while in the burrowing *Symphyla* (*scolopendrella*) the eyes are reduced to a single pair, with little or no red or dark coloring in the tapetum, differing widely in this respect from the compound-eyed, terrestrial Myriapods.

DESCRIPTION OF A NEW SPECIES OF PRIONOTUS (PRIONOTUS STEPHANOPIHYS), FROM THE COAST OF CALIFORNIA.

By W. N. LOCKINGTON.

Prionotus stephanophrys, sp. nov.

L. lat. 53; D. 10-12; A. 11; P. 12; V. 1-5; C. 3-1-8-1-3.

Body less elongate than in *P. carolinus*, head not quite three and a half; greatest depth five and a third times in total length. Greatest depth under third dorsal ray.

Snout concave in profile; forehead convex immediately in front of eye, from which to the origin of the dorsal fin the profile rises in almost a

straight line. Dorsal outline from origin of dorsal fin to caudal slightly sigmoid, the portion under base of second dorsal nearly straight, while the caudal peduncle widens at its extremity, is two and a half times as long as its least depth, and at its narrowest place one-third as deep as the greatest depth of the fish. Abdominal outline slightly curved.

Snout twice as long as longitudinal diameter of eye, which is contained about four and a half times in the side of the head; interorbital width slightly less than longitudinal diameter of eye.

Bones of head less conspicuously striated than usual in the genus. Preorbital, suborbital ring and stay, and operculum distinctly striated, the striæ radiating; upper surface of head punctate, with short striæ on the upper margin of the orbit and on the occiput. Top of head and interocular space almost flat, a serrated, crest-like ridge over each eye (hence the specific name). The interorbital space unusually broad, not at all concave, as broad as eye; a slight trace of a cross furrow behind the eye. Central ridge of operculum distinct, and continued backwards considerably beyond its membranous edge as a strong, sharp spine. A similar sharp spine on the angle of the preoperculum. A strong spine, smaller than those on the gill-covers, on the scapular bone, and a similar one on the suprascapular region. A backward-directed pre-ocular spine.

Mouth rather large, somewhat oblique, the maxillary extending to opposite front of eye; jaws nearly equal; entire upper edge of mandible hidden by the preorbital when the mouth is closed; lower edge of preorbital set with small spines terminating the striæ. Upper jaw two and one-sixth times in length of side of head.

A band of several rows of villiform teeth along both jaws; tip of the upper jaw emarginate and toothless; villiform teeth on palatines and vomer. Tongue thick and fleshy. Eye lateral, almost circular; interorbital area flat transversely.

Gill-openings continuous, the membrane not joined to the isthmus; branchiostegals seven. Gill-rakers long and slender, about three-fourths as long as the diameter of the orbit.

First dorsal arising a little anterior to the tip of the operculum; the third and longest spine nearly equal to half the length of the head, the ninth and tenth spines very short, nearly hidden in the skin. First and second dorsal spines serrated anteriorly. Second dorsal with a nearly straight upper margin, but slightly highest in front; rays all once bifurcate. Anal commencing and ending slightly posterior to the origin and termination of the second dorsal; rays all once bifurcate. Posterior margin of caudal slightly concave when expanded; all the long rays except the two outer ones branched, the four central ones three times bifurcate.

Pectoral pear-shaped when expanded; the membrane between the rays very wide; all the rays bifurcate except the uppermost and lowermost; the tip of the fin reaching to the eighth or ninth anal ray when

turned straight backwards. The three pectoral filaments very slender, the uppermost about half as long as the pectoral fin, which is contained two and two-thirds times in the total length.

Ventrals four and three-fourths times in total length, their tips nearly reaching the vent; all the rays once bifurcate, the last united by membrane at its base to the abdomen.

Bases of pectoral and ventral fins oblique, the pectoral filaments in advance of the ventrals, which are inserted vertically below the anterior margin of the pectorals.

Scales of moderate size, finely ciliate. Lower jaw, gill-membrane, and sides and upper surface of head scaleless. Scales of breast rather smaller than those of back. A row of scales along the basal part of the outer caudal rays, other fins scaleless. Lateral line simple.

General color of body slaty gray or leaden upon the upper two-thirds, the lowest third white. A black spot on the dorsal between the fourth and fifth spines, traces of it between the fifth and sixth. Three rows of black spots on the second dorsal, the spots set saddlewise across the rays. Three rows of black spots on caudal, the terminal row between the rays. Anal white. Pectoral black, with whitish cloudings. Upper part of head rather darker than the body, a silvery tint about the posterior portion of maxillary, lower part of gill-cover, and base of pectoral.

A single specimen of this species was procured in the market of San Francisco, October, 1880, and was taken off Point Reyes. It is now in the United States National Museum, numbered 27048.

A large proportion of the fish brought to the San Francisco markets is procured in the tolerably deep water of the region between the rocky islets known as the Farallones, the entrance of San Francisco Bay, and Point Reyes, a rocky promontory some forty miles north of San Francisco. This locality yielded the first specimens of *Artedius quadriseriatus* Locktn., *Odontopyxis trispinosus* Locktn., *Agonus vulsus* J. & G., *Brachyopsis verrucosus* Locktn., *Brachyistius rosaceus* J. & G., *Hippoglossoides exilis* J. & G., *Atheresthes stomias* J. & G., *Cynicoglossus pacificus* Locktn., and *Glyptocephalus zachirus* Locktn. *Brachyopsis xyosternus* J. & G. and *Artedius pugettensis* Steind. occur there in tolerable abundance, and it has now furnished the first example of a genus hitherto not known to occur north of the Gulf of Fonseca.

Günther (Cat. Fish. Brit. Mus. ii, 195, 196) gives a short diagnosis of three species of *Prionotus* from the Pacific, *P. horrens* Rich., *P. birostratus* Rich., both from the Gulf of Fonseca, and *P. miles* Jenyns, from the Galapagos. *P. stephanophrys* most resembles the latter species, but has much longer pectorals and a different coloration, the latter being "above mottled brilliant tile-red; beneath silvery white".

Table of proportionate measurements.

| Locality..... | Point Reyes, Cal. | |
|--|--------------------------|-------------------------|
| | Inches and 100ths. | 100ths of length. |
| Extreme length..... | 7. 60 | |
| Length to base of middle caudal rays..... | 6. 35 | 100 |
| Body: | | |
| Greatest height..... | | 26 |
| Least height of tail..... | | 7 |
| Length of caudal peduncle..... | | 15 |
| Preopercular spine..... | | 4 |
| Head: | | |
| Greatest length to tip of opercular spine..... | | 41 |
| Distance from snout to nape..... | | 28 |
| Greatest depth at occiput..... | | 22 |
| Width of interorbital area..... | | 7 |
| Length of snout..... | | 15½ |
| Length of operculum to end of spine..... | | 14½ |
| Length of maxillary..... | | 16 |
| Length of mandible..... | | 20 |
| Occipital process..... | | 7¼ |
| Diameter of orbit..... | | 8½ |
| Dorsal: | | |
| Distance from snout..... | | 36½ |
| Length of base..... | | 25½ |
| Height at third spine..... | | 17 |
| (Soft) length of base..... | | 28 |
| Height at longest ray..... | | 15 |
| Height at last ray..... | | 7 |
| Anal: | | |
| Distance from snout..... | | 62 |
| Length of base..... | | 26 |
| Height at longest ray..... | | 11½ |
| Caudal: | | |
| Length of middle rays..... | | 21 |
| Length of external rays..... | | 25 |
| Pectoral: | | |
| Upper appendage..... | | 25 |
| Second appendage..... | | 21 |
| Third appendage..... | | 17½ |
| Length..... | | 47½ |
| Ventral: | | |
| Distance from snout..... | | 32 |
| Length..... | | 25 |
| Branchiostegals..... | | VII |
| Dorsal..... | | X-12 |
| Anal..... | | 1-10 |
| Pectoral..... | | 13-III |
| Number of scales in lateral line..... | | 54 |

SAN FRANCISCO, CAL., November 15, 1880.

THE FRIGATE MACKEREL, *AUXIS ROCHEI*, ON THE NEW ENGLAND COAST.**By G. BROWN GOODE.**

The United States Fish Commission has obtained numerous specimens of a fish before entirely unknown in the Western Atlantic. This is the frigate mackerel, *Auxis Rochei*, twenty-eight barrels of which were taken in a mackerel-seine ten miles east of Block Island, on the 3d of August, by the schooner "American Eagle", Capt. Josiah Chase, of Provincetown, Mass.

The frigate mackerel resembles, in some particulars, the common mackerel; in others, the bonito—the genus *Auxis* being intermediate in